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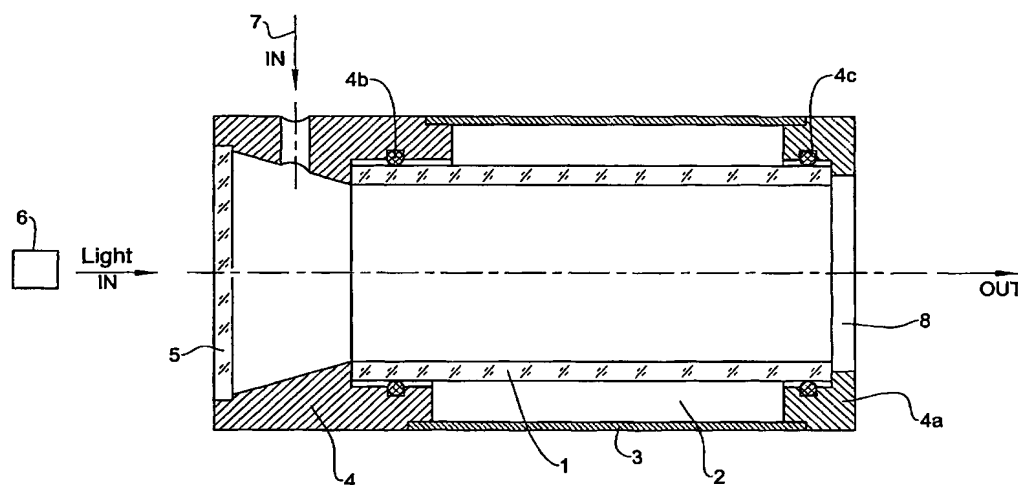
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(54) Title: **IN-LINE TREATMENT OF LIQUIDS AND GASES BY LIGHT IRRADIATION**



(57) Abstract: An in-line reactor for the treatment of liquids or gasses by light radiation is disclosed. The reactor is made of tube, pipe, or chamber made of a transparent material, having at least one fluid inlet and correspondingly at least one fluid outlet. The transparent material of the tube is selected such that its refractive index is as possible close to the refractive index of the fluid to be treated. Air gap is kept around the outer transparent walls of the reactor, in order to allow for total internal reflection inside the reactor, of light directed into it from a light source in angles of incidence greater than the critical angle. Fluid treatment systems comprising at least one said in-line reactor are also disclosed. Furthermore, method of in-line fluid treatment, and especially of water sterilization and disinfection and aseptic filling of water are disclosed. Surfaces hit by the in-line disinfected water after being launched through an outlet nozzle, could also be sterilized by launching the water with the same UV light used for the in-line treatment locked in total internal reflection within the free flow water jet.

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